Exercises

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Basic R Workshop
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http://nicolascampione.weebly.com/r-worshop.html

Exercise 1

1. Assign the value 50 to an object called femtio

2. Assign the value 16 to an object called sexton

3. Add femtio and sexton, and place them directly into an object called sum

4. What is sum?

5. What is the class of sum?

1. Make a vector called vektor with the values:
   31 6 43 25 18 31 3 28 34 12 15 21 37 40 9

2. Convert vektor into a 5x3 matrix called matris.

3. Extract the first 4 rows and 2 columns of matris into an object called mini.matris.

4. What is the sum of the rows of mini.matris?

5. Which row of mini.matris includes a value of 3?

1. Make a character vector called dino with the names:
   Tyrannosaurus
   Triceratops
   Edmontosaurus
   Troodon

2. Convert mini.matris into a data.frame called data.

3. Combine dino with data into an object called dataset.

4. Assign the columns names:
   Dino
   skull.length
   jaw.length

5. Which dino(s) has(ve) a skull length greater than 20 with a jaw length less than or equal to 31?

1. Set a working directory on your computer.

2. If you have a dataset. Save it using the appropriate file extension and move it into your working directory.

3. Return to R (R-studio) and upload your dataset.

4. Did it work? If not, open the file in textedit (Mac) or NotePad (Windows). Why didn't it work?

5. Upload my example dataset from the internet:

```
data<-read.csv2("http://nicolascampione.weebly.com/uploads/
1/9/4/1/19411255/dataset.csv")
```

1. Spend the next little while using the various functions you have learned to manipulate my dataset and/or yours.

2. Try the functions:
   attach
   apply
   tapply
   which

3. From my dataset, extract the reptiles less than 5kg.

Exercise 6

1. Experiment with the plot function.

2. Choose two variables from your (or my) dataset and plot them. If you have categorical columns try to call them out using the tapply function.

3. Try using different colours. Use the function `rainbow`, or try some of the other functions like it: `heat.colors`, `terrain.colors`, and `topo.colors`.

4. Try making your own colour vector with the colour chart, available at: http://nicolascampione.weebly.com/r-worshop.html

Exercise 7

1. Make a function that includes two numeric vectors of equal length (N).

2. Write the function so that it binds the two vectors and then calculates the sum and product of the vectors.

3. Have the function return the resultant matrix (Nx4).
   - If you are feeling adventurous, give the matrix column names (e.g., Var1, Var2, Sums, Products)

4. If you have time, make the function more challenging by making it return a list, with the above matrix and other information (e.g., colSums, colMeans, dim, etc.)

5. Apply the function to two data vectors from your dataset or from mine.

Exercise 8

1. Generate a loop that will plot each group onto their own plot, instead of all together. Use the group names as a title for the plots.

2. Integrate the function `cor(x,y)` into the loop and correlate femur length to body mass for each group. Which group has the highest correlation?

3. If you want to make step 2 more challenging, try making an empty 10x1 matrix called cor.res. Assign names to the rows based on the names of the groups, and then assign the result from each cor analysis to the empty matrix. Hint: the matrix and naming of the rows is done before running the for loop.